

Abstract

Improved methods of rinsing and drying microelectronic devices by way of an immersion processing apparatus are provided for effectively cleaning microelectronic devices. Methods and arrangements control the separation of one or more

5 microelectronic devices from a liquid environment as part of a replacement of the liquid environment with a gas environment. Cleaning enhancement substance, such as IPA, is introduced into the gas environment according to a controlled profile while the separation step is conducted. The controlled profile being directed to the timing of introduction of cleaning enhancement substance, the concentration of cleaning enhancement substance

10 and/or flow rates thereof into the vessel. Controlled timing of gas and cleaning enhancement substance delivery can also improve effectiveness of separation. Methods and arrangements are also provided for controlling a drying step to be conducted on the one or more microelectronic devices after they have been separated from a liquid environment by replacing the liquid environment with a gas environment. Preferably, an

15 arrangement of gas distribution devices create one or more drying gas curtains, which gas curtains may be controllably directed with respect to a set of microelectronic devices to provide optimal drying of the microelectronic devices after being separating from a liquid.